

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Office Action dated July 6, 2010, has been received and its contents carefully reviewed. Claims 1-6 are currently pending. Reexamination and reconsideration of the pending claims are respectfully requested.

The Office Action rejects claims 1-3, 5, and 6 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,270,649 to Zeikus et al. (*Zeikus*). Applicants respectfully traverse the rejection.

As required in M.P.E.P. § 2131, in order to anticipate a claim under 35 U.S.C. § 102, “the reference must teach every element of the claim.” *Zeikus* fails to teach or suggest all the elements of claims 1-3, 5, and 6, and thus cannot render these claims obvious.

Claim 1 recites, “before said electrode is placed in said cell, consisting of forming a biofilm on at least part of the surface of said electrode, ... consisting simultaneously of subjecting said electrode to a bias potential.” *Zeikus* fails to teach or suggest at least these elements of claim 1. In fact, *Zeikus* discloses that “the biocatalyst and neutral red are preferably immobilized on the cathode. In the case of whole cell biocatalysts, self-immobilization on a fine woven graphite felt electrode was found to take place ... One wishing to immobilize a biocatalyst in the practice of the present invention could do so placing the biocatalyst, neutral red, and pyridine nucleotide cofactor between an electrode and an outer membrane (e.g., a polymer membrane) such that the biocatalyst, cofactor, and neutral red are sandwiched between the electrode and membrane. Alternatively, biocatalyst, neutral red, and pyridine nucleotide cofactor could be embedded in a matrix polymer and coated onto the electrode.” *Zeikus*, column 8, lines 44-61, emphases added. *Zeikus* is silent with respect to “subjecting said electrode to a bias potential.”

The Office Action further states “[t]he method of invention [of *Zeikus*] further comprises the step of delivering to the cathode an electric current suitable in strength to cause the reduction of at least a portion of oxidized neutral red in the cathode compartment (bias potential) (see col. 5, lines 55-56; col. 6, lines 35-57; figure 1).” *Office Action*, page 6. The Office appears to assert that column 5, lines 55-56; column 6, lines 35-57; figure 1 of *Zeikus* teaches

“simultaneously of subjecting said electrode to a bias potential.” Applicants respectfully disagree.

Claim 1 recites “process for the treatment of at least one of the electrodes (cathode and/or anode) of a fuel cell, **before** said electrode is placed in said cell.” Figure 1 of *Zeikus* is a schematic diagram of a microbial fuel cell. *Zeikus*, column 5, lines 41-42. Therefore, Figure 1 and associated text cited by the Office describe process or activity **after** the microbial fuel cell is assembled (i.e., **after** an electrode is placed in the microbial fuel cell). There is no teaching or suggest on “the treatment of at least one of the electrodes (cathode and/or anode) of a fuel cell, before said electrode is placed in said cell,” as required by claim 1. In fact, *Zeikus* discloses that the immobilization of the biocatalyst is carried out after the electrode is place in the bioreactor system. *See, Zeikus*, column 6, lines 35-51.

Additionally, the present application provides “the formation of the biofilm for catalysing the electrode (anode or cathode) reactions makes it possible to limit, or even to completely replace, the charging with mineral catalysts of electrodes. The formation of the biofilm makes also it possible to limit or even to completely replace the materials normally used to make the cathode, such as graphite and platinum, with less expensive materials, such as stainless steels and aluminium, nickel or titanium alloys. In addition, given that the biofilm synthesizes the elements needed for catalysing the reaction at the electrodes, it is no longer necessary, in the construction of the cell, to add, in the electrode compartments, organic, mineral or biological compounds, as is the case with cells based on the principle of enzyme catalysis.” Specification, page 7, line 23, to page 8, line 5, emphases added. *Zeikus* fails to teach these advantageous effects.

Accordingly, claim 1 is allowable over *Zeikus*. Claims 2, 3, 5, and 6 variously depend from claim 1, and are also allowable for at least the same reasons as claim 1. Applicants therefore respectfully request withdrawal of the 35 U.S.C. §102(b) rejection of claims 1-3, 5, and 6.

The Office Action rejects claim 4 under 35 U.S.C. §103(a) as being obvious over *Zeikus* in view of WO 02/0058221 to Chaix (*Chaix*). Applicants respectfully traverse the rejection.

Claim 4 depends from claim 1, and incorporates all the elements of claim 1. As discussed, *Zeikus* fails to teach or suggest at least the above-recited elements of claim 1, namely, “before said electrode is placed in said cell, consisting of forming a biofilm on at least part of the surface of said electrode, ... consisting simultaneously of subjecting said electrode to a bias potential.” *Chaix* does not cure the deficiency of *Zeikus*. In fact, the Office only cites *Chaix* for disclosing that the water being circulating water. *Office Action*, page 5.

Accordingly, claim 1 and its dependent claim 4 are allowable over the combined teaching of *Chaix* and *Zeikus*. Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claim 4.

The application is in condition for allowance and early, favorable action is respectfully solicited. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

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